UNITED
NATIONS

ST

Secretariat

Distr.
GENERAL

ST/SG/AC.10/C.3/26
30 July 1997

Original: ENGLISH

COMMITTEE OF EXPERTS ON THE TRANSPORT
OF DANGEROUS GOODS

Sub-Committee of Experts on the
Transport of Dangerous Goods

REPORT OF THE SUB-COMMITTEE OF EXPERTS ON ITS THIRTEENTH SESSION

(Geneva, 7-17 July 1997)

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REPORT

ATTENDANCE

1. The Sub-Committee of Experts on the Transport of Dangerous Goods held its thirteenth session from 7 to 17 July 1997.

2. This session of the Sub-Committee was attended by the following countries: Argentina, Belgium, Brazil, Canada, China, France, Germany, Italy, Japan, Mexico, Netherlands, Norway, Poland, Russian Federation, Spain, Sweden, United Kingdom, United States of America.

3. Observers from the following countries were also present under rule 72 of the Economic and Social Council's rules of procedure: Austria, Burkina Faso, Finland, Iran, New Zealand, Nigeria, South Africa, Switzerland, Tunisia.

4. Representatives of the following specialized agencies were also present: International Atomic Energy Agency (IAEA), International Civil Aviation Organization (ICAO), International Labour Office (ILO), International Maritime Organization (IMO).

5. The following intergovernmental organizations were also represented: European Commission (EC), Central Office for International Railway Transport (OCTI) and the Committee of the Organization for Co-operation between Railways (OSZhD).

6. Representatives of the following non-governmental organizations: European Chemical Industry Council (CEFIC), European Committee of Paint, Printing Ink Artists Colours Manufacturer's Associations (CEPE), European Portable Tank Association/Tank Container Association (EPTA/TCA), European Fertilizer Manufacturers' Association (EFMA), European Industrial Gases Association (EIGA), Federation of European Aerosol Associations (FEAA), Hazardous Materials Advisory Council (HMAC), International Air Transport Association (IATA), International Council of Intermediate Bulk Container Manufacturers' Associations (ICIBCA), International Confederation of Plastics Packaging Manufacturers (ICPP), International Road Transport Union (IRU) and International Organization for Standardization (ISO) took part in the discussion of items of concern to their organizations.

ADOPTION OF THE AGENDA

7. The Sub-Committee adopted the provisional agenda prepared by the secretariat (ST/SG/AC.10/C.3/25 and Add.1), after amending it to include documents submitted late (informal documents INF.1 and INF.2). Documents ST/SG/AC.10/C.3/1997/41 and -/1997/44 were withdrawn by their authors.

ELECTION OF OFFICERS

8. At its nineteenth session, the Committee of Experts elected Mr. S. Benassai (Italy) and Mr. F. Wybenga (United States of America) respectively Chairman and Vice-Chairman for the 1997-1998 biennium (ST/SG/AC.10/23, para. 166).

STATEMENT BY THE DIRECTOR OF THE TRANSPORT DIVISION

9. Mr. J. Capel Ferrer, Director of the ECE Transport Division, welcomed participants. He informed the Sub-Committee that the tenth revised edition of the Recommendations on the Transport of Dangerous Goods had recently been published in English and that the French version was ready for printing.

10. He also announced that the vacant P2 post allocated to the Dangerous Goods Unit of the Transport Division should become unfrozen on 1 January 1998 and that the secretariat had been authorized to set recruitment procedures in motion. The only authorized recruitment procedure was that of "national competitive examinations" which were based on programmes in the areas of economics, administration, statistics, etc., but the personnel recruitment service had been notified of the special nature of the work done in that Unit, to enable it to recruit a candidate with the necessary scientific background.

11. Finally, he drew attention to the discussions in progress at the Intergovernmental Forum on Chemical Safety and in the Coordinating Group for the harmonization of chemical classification systems with a view to assigning responsibility for monitoring the work on global harmonization of such systems to a group of the Committee or another group working under the auspices of the Economic and Social Council. He noted that, at its next session, the Committee itself was expected to take a position on whether its current structure should be changed and its mandate expanded. Moreover, creating another body within the United Nations system, whether under the auspices of the Economic and Social Council or of some other supervisory body, would mean setting up coordination machinery as the new body's mandate would to some extent duplicate that of the Committee. He therefore invited the Sub-Committee to give immediate consideration to the matter to enable the ongoing discussions to progress constructively.

DRAFT AMENDMENTS TO THE MODEL REGULATIONS ON THE TRANSPORT OF DANGEROUS GOODS

(a) Tanks

Marking of holding time

Documents: ST/SG/AC.10/R.513 and -/Corr.1 (EIGA)

12. The Expert of the United States of America offered to work with EIGA on the question of whether it was necessary to indicate the reference holding time on tanks intended for the transport of refrigerated liquefied gases, since only the marking of the actual holding time was of any practical use. He said that he was prepared to submit a proposal at the next session.

Portable tanks for gases with critical temperatures below 65° C

Documents: ST/SG/AC.10/R.515 and -/Corr.1 (EIGA)

13. Most delegations expressed the hope that a new section 6.6.5 would be created for such tanks, and the representative of EIGA was invited to review his proposal on that basis for the next session and to include the necessary additions in chapter 4.2 and the portable tank transport instructions to be indicated in the Dangerous Goods List for the gases in question.

14. The representative of EIGA said that he would submit an appropriate proposal. A working group will meet during the next session in tandem with the plenary to consider that proposal.

Precautions to be taken during leakproofness testing

Document: ST/SG/AC.10/C.3/1997/6 (EPTA/TCA)

15. Several delegations took the view that the EPTA/TCA proposal had to do more with working safety regulations than with transport regulations, and the representative of EPTA/TCA withdrew his proposal.

Coding of portable tanks and marking of that code

Documents: ST/SG/AC.10/C.3/1997/7 (EPTA/TCA)
ST/SG/AC.10/C.3/1997/10 (Germany)

16. At the request of the representative of Germany, consideration of these two documents was postponed until the next session when the results of the discussion on the question by the RID/ADR Joint Meeting in September 1997 would be known.

Rationalized approach to assigning portable tank requirements to substances of Classes 3 to 9

Document: ST/SG/AC.10/C.3/1997/16 (United States of America)

17. The guidelines for assigning portable tank requirements to substances of Classes 3 to 9 were considered by a working group after discussion in the plenary and were adopted with some amendments (see annex 1).

18. The Sub-Committee requested the secretariat to reproduce the amended guidelines in an addendum to the report (ST/SG/AC.10/C.3/26/Add.1). They were intended primarily as a guide for the experts in the Committee and Sub-Committee in assigning tank transport instructions. The Committee will decide whether or not they should be published in the Recommendations or kept in a separate document.

19. The Sub-Committee accepted the United States' expert's offer to review the instructions for transport in tanks T1 to T34 accordingly, together with columns 10 and 11 in the Dangerous Goods List.

20. Regarding the transitional provisions to be included, it was noted that it would be better to include them in each legal instrument concerned, whether national or international.

Transport of self-reacting substances of Division 4.1, Type F, in portable tanks

Document: ST/SG/AC.10/C.3/1997/25 (CEFIC)

21. The proposal to authorize the transport of self-reactive substances in portable tanks was adopted (see annex 2).

Use of frangible discs

Document: ST/SG/AC.10/C.3/1997/36 (Spain)

22. Several delegations said that, instead of prohibiting the use of fragmentable frangible discs, it would be better to ensure that all pressure relief equipment was designed to enable fragments to be evacuated with the discharge flow.

23. The expert of Spain said that he would revise his proposal in the light of the various comments made.

(b) Use of packagings and IBCs

Packaging for safety matches

Document: ST/SG/AC.10/C.3/1997/9 (South Africa)

24. Several delegations said that it would be preferable not to include provisions describing all possible packagings in any detail. They preferred the United Kingdom's approach in document ST/SG/AC.10/C.3/1997/40 setting out the minimum requirements to be observed. The observer from South Africa withdrew her proposal.

Proposals for use of packagings

Documents: ST/SG/AC.10/C.3/1997/24 (United States)
ST/SG/AC.10/C.3/1997/40 (United Kingdom)
Informal document: INF.22 (Germany)

25. After some discussion as to whether the packing methods to be worked out during the current biennium could actually be introduced through different modal instruments, it was recalled that the Sub-Committee's set objective was to include in the next edition of the Model Regulations packing instructions acceptable from the safety standpoint for overland and maritime transport. The modal organizations concerned were of course invited to participate actively in those deliberations, as were non-governmental organizations interested primarily in packaging questions.

26. The Sub-Committee welcomed the contributions by the United Kingdom and the United States and adopted basic principles to be followed in devising packing methods during the 1977-1988 biennium (see annex 3). In particular, the basic proposals should be compared with the prevailing provisions arrived at under the auspices of United Nations organs or specialized agencies or in national regulations.

27. The expert from Canada said that the current Recommendations allowed for considerable flexibility in the choice of appropriate packing methods, provided that packagings conformed to the general packing conditions and had been tested and certified as being of the necessary standard. Consequently, any additional restriction, even if linked with provisions in prevailing international instruments, should be justified on safety grounds.

Packing instructions for articles

28. A number of comments were made on the proposal by the United Kingdom expert (ST/SG/AC.10/C.3/1997/40), in particular regarding the need for consistency with the provisions of international instruments currently in force and the fact that some packing instructions combined packing conditions and other conditions which had to do with classification. It might therefore be as well to transfer or repeat some of the conditions contained in the packing instructions in chapter 3.3 concerning special provisions.

29. Delegations were invited to submit their detailed comments to the United Kingdom expert by the end of August 1997, so that he could draft a new proposal for the following session.

Packing instructions for substances

30. Several delegations said that the United States' proposal (ST/SG/AC.10/C.3/1997/24), in particular packing instructions P001 and P002, offered a wide range of packaging uses which did not conform to practice under international instruments. Those instruments imposed restrictions according to the class or packing group of goods (e.g. regarding the use of removable head drums), so that it would be difficult to apply the same instruction to all substances of Classes 3, 6.1 or 8, regardless of their packing group.

31. Another question was whether or not instructions on packagings should be separated from those on IBCs.

32. It was also noted that a number of special provisions in annex 3 did not correspond to those in prevailing international instruments and that some of them were really packing instructions.

33. It was finally decided to set up a working group to consider the document in detail. The United States' expert should revise his proposal on the basis of the comments made by the working group and of comments submitted in writing by the end of August 1997.

34. The Sub-Committee noted that the relevant organs of IMO, ECE and OCTI did not meet until September 1997, so that it would be difficult for them to submit their observations by the 26 September 1997 deadline for the submission of documents. A member of the secretariat said that, in the circumstances, the comments could be circulated in official form, at least in the original language of submission, provided they were received by 24 October 1997.

35. Comparisons of the IMDG Code, RID/ADR, United States Regulation 49 CFR and Canadian Regulations by the working group revealed many similarities regarding the types of packaging that could be used for liquids of Classes 3, 6.1 and 8 (which could be covered by instruction P001) and for solids of Classes 6.1 and 8 (which could be covered by instruction P002).

36. North American regulations contained no limits lower than those contained in chapter 6.1 of the Model Regulations and were based on the principle that packagings tested and certified in accordance with chapter 6.1 could be used if the limits prescribed in that chapter were observed. The RID and ADR regulations and, in particular the IMDG Code, contained additional restrictions on the maximum authorized capacity and mass of packagings in certain cases.

37. While not rejecting the possibility of limits stricter than those laid down in chapter 6.1, the Sub-Committee took the view that, if they were to be taken into account, those restrictions must be justified on safety grounds. As some of the packagings were actually in use, the competent authorities should be able to provide users with strong arguments for prohibiting their use in future. Without such arguments, they would have to grant numerous exceptions, which would involve considerable administrative work.

38. The organizations concerned were thus invited to verify and justify the restrictions and prohibitions imposed by regulations for which they were responsible and to ascertain whether, and to what extent, those restrictions and prohibitions could be challenged.

39. Several experts said that observance of the requirements in chapter 6.1 regarding construction, testing and certification of packagings provided a safety margin which was necessary, but it did not provide an absolute guarantee of safety, as depending on how the packagings were used, that safety margin might not be always sufficient. The restrictions in question were thus generally intended to provide an additional safety margin and to limit risk.

40. The representative of OCTI explained that the prohibition on the use of removable head drums and jerricans for liquids in Packing Group I was linked to the difficulty in ensuring the leakproofness of removable-head closures, given the stresses to which such packagings were subjected in overland transport, particularly when they were reused after being damaged, albeit only slightly, during a first journey. The risk from spillage had been considered unacceptable in the case of substances of Packing Group I, and such packagings were thus prohibited for those substances.

41. Attention was also drawn to the apparent lack of demand from industry for the use of removable-head drums for the transport of liquids of Packing Group I, especially given the difficulty in getting such drums to meet test requirements, which made them more costly.

42. In the case of substances other than those in division 6.1 and Class 8, the representative of OCTI said he would prepare packing instructions for groups of substances belonging to one or more divisions along the lines of those prepared by the working group. He was invited to work with the expert from the United States and the secretariat.

43. It was pointed out that the packing instructions should also include requirements for closures (hermetically sealed, or effectively closed) and vents, if necessary. In addition, some packagings could be carried only as full loads.

44. The Sub-Committee noted that instruction P004 actually covered substances the carriage of which was prohibited under RID, ADR and the IMDG Code.

45. The expert from the United States said that instructions P200 to P202 applied to both liquefied and compressed gasses.

46. The expert from the Netherlands expressed surprise that 1A1 drums were listed as packagings acceptable for the transport of ethyl chloride and ethylene oxide.

47. Several delegations said that the instructions for IBCs should be drawn up in such a way that the user would not have to ascertain their applicability according to the physical and chemical properties of the substance to be transported, even if the number had then to be increased.

48. Several delegations also asked for a tabular presentation and for IBCs for liquids to be distinguished from those for solids.

(c) Other packaging and IBC matters

Cold resistance of plastics packagings and IBCs

Document: ST/SG/AC.10/C.3/R.792 (Finland)

49. The observer for Finland withdrew his proposal that the competent authority could require a drop test at a temperature below -18° C, as the discussion had shown that part of the problem in question did not appear to arise in other cold-climate countries and the recommendatory character of the provisions in question ipso facto left each competent authority free to take any measures it deemed necessary to deal with special situations.

Minimum thickness requirements for metal IBCs

Documents: ST/SG/AC.10/C.3/1997/17 (United States)
ST/SG/AC.10/C.3/1997/39 (United Kingdom)

50. The United Kingdom's proposal to remove the specifications for construction materials and the provisions for minimum wall-thickness for metal IBCs was not adopted. While several delegations supported the principle that the ability to pass the performance tests ensured the requisite safety standard, the majority of delegations took the view that minimum wall-thickness should be retained for safety purposes, at least as long as other tests, such as vibration and penetration tests, were not included in the set of obligatory tests.

51. The United States proposal to establish a more linear relationship between minimum wall-thickness and the capacity of IBCs was adopted (see annex 2). The proposal to allow, when calculating the equivalent thickness for IBCs constructed of metals other than the reference steel, for actual values to be used rather than guaranteed minimum values according to material standards was adopted only for austenitic steels (see annex 2).

52. The United States' expert said that he might submit a new proposal for metals other than austenitic steels.

Use of the W mark for IBCs

Document: ST/SG/AC.10/C.3/1997/18 (United States of America)

53. The proposal to use the W mark for IBCs was adopted, subject to an amendment to the effect that the conditions for the use of the mark should be the same as for packagings (see annex 2).

Large packagings

Documents: ST/SG/AC.10/C.3/1997/35 and -/35/Rev.1 (United Kingdom, Germany, Norway, Sweden)

54. The Sub-Committee elected to consider this proposal on the basis of the texts submitted using the format of the ninth revised edition of the Recommendations (annex A to document ST/SG/AC.10/C.3/1997/Rev.1 or its equivalent, annex 2 to document ST/SG/AC.10/C.3/1997/35). The proposal to insert a new chapter on large packagings was adopted in principle, and a revised text has been approved on the basis of the format of the Model Regulations of the tenth revised edition of the Recommendations (see annex 2).

55. A proposal by the expert from France to add tare weight to the list of markings required in X.3.1 was not adopted.

56. The expert from Belgium wondered whether minimum wall-thicknesses for metal packagings might be included in X.4.1. The Sub-Committee considered that a proposal in writing would be necessary for the question to be discussed.

57. The expert from France suggested that, for wood and fibreboard packagings, provision should be made for the possible use of liners, as in the case of flexible material packagings. Several experts were of the view that, in practice, liners would not be used for such packagings. The expert from France was invited to submit a proposal if he felt it necessary.

58. The expert from Belgium proposed that provision should be made for periodic tests in section X.5, in addition to the standard model tests. Several experts said that there was no need to subject such packagings to periodic testing as they were used as the outer component of composite packagings. The Belgian proposal received no support.

59. A proposal by the Netherlands expert to load large packagings to six times (as for flexible IBCs), rather than twice, their permissible gross mass for the top lift test (X.5.3.2.2) was not adopted.

60. The proposal by the expert from Belgium to include tear, topple and righting tests, as for IBCs, was not adopted.

Top lift test for flexible IBCs

Informal document: INF.4 (Poland)

61. Several experts said that the basis for the Polish proposal to perform the top lift test required for flexible IBCs at four times, rather than six times, the maximum permissible load was not sufficiently clear and that the proposal should have been submitted as a formal document. The expert from Poland was invited to submit a new proposal if he so wished.

(d) Other draft amendments

Desensitized nitroglycerin

Document: ST/SG/AC.10/R.510 (Belgium)
Informal document: INF.14 (United States of America)

62. The expert from Belgium said that he intended to revise his proposal to take account of the format of the Model Regulations. The principle that new amendments were needed because of the inclusion of entries for mixtures of desensitized nitroglycerin in Class 3 was supported by several experts. The expert from Belgium was invited to take account of INF.14 in his revised proposal.

Provisions concerning radioactive material

Document: ST/SG/AC.10/C.3/1997/33 (IAEA)

63. The Sub-Committee expressed its appreciation for the considerable work done by the IAEA consultants in submitting the new IAEA Regulations on the transport of radioactive material (Safety standard series ST-1) in a form compatible with that of the Model Regulations in the tenth revised edition of the Recommendations, so as to permit the incorporation of the provisions of the IAEA Regulations in the UN Model Regulations.

64. Many experts stressed the importance of amalgamating the two sets of regulations as, in practice, international modal regulations and most national regulations covered all types of dangerous goods, including radioactive material. It was also pointed out that, although the amalgamation of the two sets of regulations was to be undertaken by the Committee of Experts in cooperation with IAEA, the responsibility for the requirements concerning the transport of radioactive material and for updating them would continue to lie exclusively with IAEA.

65. The representative of IAEA said that his organization also planned to review its working methods and, in particular, to bring the existing 10-year interval between amendments into line with the 2-year period applicable to the United Nations Recommendations, in order to be able to respond more effectively to problems encountered in practice and incorporate technological innovations more rapidly. That would also permit effective cooperation between the United Nations, IAEA and the other international transport organizations concerned.

66. A number of oral comments were made regarding the document itself, concerning such matters as the general character of some definitions in the IAEA Regulations which could be included in the general part, rather than in the part relating specifically to Class 7, the location of provisions concerning certificates (approval of packagings in part 6, notifications and approval of consignments in part 5), and the need to refer to paragraphs of the Model Regulations in annex 4.

67. Delegations wishing to make comments on the document were requested to submit them in writing to the expert of the United States by the end of August 1997. The United States expert will prepare a new text taking account of those comments for discussion at the next session.

68. It was noted that IMO and ICAO would work on integrating the IAEA Regulations in their respective instruments in the autumn of 1997. The Sub-Committee expressed the hope that those organizations would concentrate their efforts on the provisions specific to their respective modes and that they would not duplicate the work concerning the provisions common to all modes, which would be discussed in December 1997.

Packagings to be used for the transport of dangerous goods in limited quantities

Document: ST/SG/AC.10/C.3/1997/5 (CEPE)

69. Several delegations noted that the CEPE proposal was tantamount to authorizing the transport of dangerous goods in packagings tested and certified in accordance with chapter 6.1 of the Model Regulations, i.e. without quantity limitations other than those provided in chapter 6.1, under exemption conditions normally applicable only to dangerous goods packaged in small quantities. The proposal therefore appeared unacceptable.

70. The representative of CEPE said that had not been the aim of the proposal and that he would submit it in revised form at a forthcoming session.

Criteria for inclusion of viscous flammable liquids in Packing Group III

Document: ST/SG/AC.10/C.3/1997/13 (CEPE)

71. The CEPE proposal was adopted, subject to an amendment proposed by the expert from the United States of America which was also acceptable to the representative of CEPE (see annex 2).

Aerosols

Documents: ST/SG/AC.10/R.532 (Norway)
ST/SG/AC.10/C.3/1997/30 (Germany)
Informal document: INF.27 (Argentina)

72. The Chairman asked the authors of the documents whether they could be considered under item 5 on global harmonization of systems of classification. The suggestion was accepted.

73. The expert of Canada nevertheless drew attention to a practical transport problem raised by the Norwegian proposal. Classifying any aerosol dispenser containing a liquid of division 6.1, Packing Group III, in division 2.3 would be tantamount to prohibiting the transport of such dispensers by air, although such aerosols could currently be transported by air under division 2.2, with a 6.1 subsidiary risk.

74. After a general discussion, it was decided to return to the question of aerosols under item 5 (b). The representative of ICAO said that the ICAO Technical Instructions already contained numerous special provisions for aerosols and, depending on the decisions taken, it might be as well to review those special cases.

Special Provision 274 for substances under Classes 6.1 and 8

Document: ST/SG/AC.10/C.3/R.791 (Germany)

75. The expert from Germany proposed that Special Provision 274 should be added in new N.O.S. and generic entries for which it was applied by the IMDG Code.

76. Several delegations considered that the wording of the entries in question provided enough information about the nature of the product transported to enable emergency services to take appropriate action in the event of an accident. They opposed the German proposal.

77. A member of the secretariat pointed out that the primary reason why Special Provision 274 was applicable in the IMDG Code for the entries in question was not to identify the different hazardous ingredients, but to identify the presence of a marine pollutant.

78. It was also pointed out that Special Provision 274 was applicable in the RID/ADR for all N.O.S. entries, but not for generic entries other than N.O.S.

79. The representative of Germany said that he would submit a revised proposal taking those comments into account.

Transport of samples of unknown properties

Document: ST/SG/AC.10/C.3/1997/2 (CEFIC)
Informal document: INF.13 (United States)

80. The Sub-Committee recognized that the transport of samples with unknown properties raised practical problems and ought to be dealt with. A working group was set up to consider the two approaches proposed. The group prepared a provisional text, which is reproduced in square brackets in annex 2.

No. UN 1305 - VINYLTRICHLOROSILANE, INHIBITED

Document: ST/SG/AC.10/C.3/1997/3 (CEFIC)

81. The proposal to delete the term "inhibited" was adopted on the basis of the technical information provided by CEFIC (see annex 2). It was noted that the data provided were for Packing group II, but it was decided to keep Packing group I.

82. The expert from Canada said that, in accordance with IUPAC principles, the name should be TRICHLOROVINYLSILANE.

Exempted organic peroxides with flammable properties

Document: ST/SG/AC.10/C.3/1997/12 (CEFIC)

83. The proposal was to classify flammable organic peroxides not belonging to division 5.2 in that division so that they could be transported together with or stored in the same places as organic peroxides in division 5.2. That is not possible at present because of the rules requiring substances in divisions 5.2 and 4.1 and Class 3 to be segregated.

84. Several experts considered that the problem of segregating substances should be dealt with in the context of segregation rules rather than classification, because classification ought to reflect the actual danger presented by the product.

85. The proposal was not accepted.

Request for a new UN entry "Dangerous goods in equipment or apparatus"

Document: ST/SG/AC.10/C.3/1997/15 (United States of America)

86. It was noted that the entry in question appeared in the ICAO Technical Instructions. The expert from the United States said that it would be desirable to cover that type of goods in regulations applicable to other modes of transport.

87. The proposal to include an entry was supported in principle. However, several experts wanted Special Provision 106 to go with it. It was pointed out in particular that a new marginal 2009 provided a general exemption from RID and ADR for the transport of equipment or apparatus (except where covered by other UN entries) which incidentally included goods that were dangerous by virtue of their structure or operating circuits. The reason was that such equipment was much more solidly constructed than any other packaging prescribed in the Model Regulations.

88. It was also pointed out that the entry ought to be properly differentiated from other existing entries applicable to particular types of appliances (e.g. refrigeration equipment).

89. The expert from the United States was invited to submit a new proposal taking into account the various comments also made on the details of the proposal.

Toxic by inhalation substances

Document: ST/SG/AC.10/C.3/1997/20 (United States)
Informal document: INF.26 (EIGA)

90. The Sub-Committee received favourably the proposal to include special requirements for substances toxic by inhalation. The following comments were made, however:

(a) Account should be taken of the work on global harmonization of classification and labelling systems and no decision should be taken on the classification of such substances until a consensus had been reached on harmonization;

(b) The packing group concept was perhaps not suitable; substances of this group could have specific more severe packing instructions;

(c) The label logo should reflect the danger without there being any need for a written text;

(d) A new type of tank did not seem absolutely necessary and a type already included in instructions T1 to T34 could be prescribed;

(e) The thermal insulation requirement was questioned, particularly as toxic by inhalation substances had been carried in portable tanks without insulation outside the United States for many years. More detailed justification was required.

91. The expert from the United States said that he would submit a new proposal at the following session. He invited interested delegations to make suggestions for a possible label logo.

Reclassification of entry UN2054, morpholine

Document: ST/SG/AC.10/C.3/1997/23 (United States)
Informal document: INF.30 (EPTA/TCA)

92. The expert from the United States withdrew his proposal on the grounds that he intended to revise it for the following session.

93. The expert from Belgium said that the LD_{50} oral values would justify a division 6.1 subsidiary risk label. The representative of CEFIC said that, in the European Union classification, this substance was classified as corrosive, but in the lowest danger category.

Restructuring of RID/ADR

Document: ST/SG/AC.10/C.3/1997/34 (secretariat)

94. The Sub-Committee noted that the work on restructuring of RID and ADR would result in the harmonization of the structure of RID/ADR with that of the Model Regulations, but that a number of divergencies and additions had been felt necessary, including a new chapter 4.3 on the use of containers and vehicles for the carriage of goods.

95. The expert from the United States proposed that column (5) should be amended as in RID/ADR to contain references to the hazard labels to be affixed rather than to subsidiary risks. The expert from Canada said a written proposal would be necessary.

96. The Sub-Committee adopted the addition of a new paragraph 2.0.1.3 to make it clear that packing groups were groups of substances and articles (see annex 2).

Human experience

Documents: ST/SG/AC.10/C.3/1997/38 and -/Corr.1 (United Kingdom)

97. This proposal was to apply special provision 279 to certain substances currently classified as dangerous but not meeting the classification criteria.

98. The representative of HMAC said that that observation should not be interpreted as meaning that a substance had been classified on the basis of human experience. In his view, special provision 279 should be applied only if human experience could actually be proved.

99. The expert from the United Kingdom said that he would submit a new proposal.

(e) Class 1

New entries for propellants, solid

Document: ST/SG/AC.10/C.3/1997/1 (Sweden)
Informal document: INF.23 (Germany)

100. The Sub-Committee agreed to create a new entry 1.4C for solid propellants (see annex 2), but the proposal for an entry 1.4S was not adopted.

Definitions of substances related to self-reactive substances

Document: ST/SG/AC.10/C.3/1997/42 (United States of America)

101. The proposal contained in paragraph 7 of the document was adopted with some amendments concerning 7(b) (see annex 2).

New UN numbers for pyrotechnic air bag inflators

Document: ST/SG/AC.10/C.3/1997/45 (Germany)

102. The expert from Germany explained the industry's practical difficulties with the existing entries of Class 1, UN Nos. 0353 or 0431, used in his country for pyrotechnic air bag inflators, particularly regarding mixed loading with similar articles of Class 9 (UN 3268). He therefore proposed adding a new entry 1.4G.

103. Several experts said the classification should not be changed simply because of transport operation problems. If necessary, the transport requirements should be reviewed. It was also pointed out that the industry was gradually adjusting to the transport requirements for No. 3268 so as to be able to transport air bag inflators under the existing Class 9 entry.

104. At the request of the expert from Germany, the Sub-Committee was asked whether it would in principle be in favour of including a new entry in Class 1. Most experts were opposed to a new entry in Class 1.

DRAFT AMENDMENTS TO PART 1 OF THE MANUAL OF TESTS AND CRITERIA

Test 6(c)

Documents: **ST/SG/AC.10/C.3/R.529 (Secretariat);**
ST/SG/AC.10/C.3/R.602, -/Add.1, -/Add.1/Corr.1 and -/Add.2 (Canada)
ST/SG/AC.10/C.3/R.641, ST/SG/AC.10/C.3/R.705 (United States)
ST/SG/AC.10/C.3/R.613/Rev.1 (France)
ST/SG/AC.10/C.3/1997/14 (Canada)
ST/SG/AC.10/C.3/1997/19 (United States of America)

Informal documents: **INF.8 (France); INF.10 (Canada);**
INF.16; INF.17 (United Kingdom); INF.19 (Netherlands);
INF.25 (Sweden)

105. A working group was set up to consider the report submitted by the expert from Canada, who was responsible for coordinating work on this question (ST/SG/AC.10/C.3/1997/14), together with the new proposals and informal documents. The working group was asked to make proposals regarding the continuation of the work.

106. The working group concluded (Informal document INF.32) that the time available at this meeting was not sufficient to have an in depth discussion of the highly technical documents that had been presented in the time available to it, and decided to concentrate on deducing the main areas of concern and the most important issues to be addressed to come up with a final document on revising the 6(c) Test.

107. The working group first considered the definition for fireball as presented in ST/SG/AC.10/C.3/1997/19 and concluded that this definition was a good basis for reaching a consensus. Experts were asked to convey their comments to the expert from the United States so that he could prepare a revised text. A short discussion was held on the topic of measuring thermal flux, but it was evident that this still would need further deliberations before a conclusion could be reached.

108. The working group agreed that the most important issue was the question of energy levels for projections in dividing between Divisions 1.2 and 1.4 as well as between Divisions 1.4 and 1.4S. When this is agreed upon, the other downstream issues, e.g. development of a suitable witness screen, could be more easily agreed upon. Another very important issue was the question on how to conduct the test, in particular the choice of fuel and the duration of the test.

109. The working group suggested that additional preparatory work would be necessary before the decisions concerning Test 6 (c) could be taken by the Sub-Committee. The expert from the United States offered to host a working group meeting from 2 to 8 February 1998 in Washington.

110. The Sub-Committee agreed that Test 6 (c) should be discussed in a working group at its July 1998 session after that preparatory work has been done and that the work should be finalized in this biennium. The Sub-Committee confirmed that the purpose of that work on Test 6(c) is to clarify existing test methods and that it should not lead to reclassification of explosives (coherence with the definitions should be maintained). The two main documents to be used as a basis for work in the light of other formal or informal documents are ST/SG/AC.10/C.3/1997/19 from the United States and ST/SG/AC.10/C.3/R.613/Rev.1 from France. Any new comment or proposal for consideration by the working group should be sent to the expert from the United States and other known participants before 31 December 1997.

Other draft amendments to the Manual of Tests and Criteria

Additional screening procedure

Document: ST/SG/AC.10/C.3/1997/4 (CEFIC)

111. The proposal to include additional screening procedures in the Manual of Tests and Criteria to enable an adequate hazard evaluation to be carried out without the need for larger scale classification tests was widely supported in principle. The representative of CEFIC was invited to collect detailed comments from all interested delegations and to submit a revised proposal for the next session which would take account of all these comments.

GLOBAL HARMONIZATION OF SYSTEMS OF CLASSIFICATION AND LABELLING OF CHEMICALS

5 (a) General

Document: ST/SG/AC.10/C.3/1997/22 (United States of America)
Informal documents: INF.15 (United Kingdom)
INF.31 (ILO)

112. The Sub-Committee took note of the information provided concerning the outcome of the 2nd session of the Intergovernmental Forum on Chemical Safety (Ottawa, 10-14 February 1997) and subsequent discussions at the level of the Inter-Organization Programme for the Sound Management of Chemicals

(IOMC) Coordinating Group for the Harmonization of Chemical Classification Systems (10th consultation, Geneva, 26-27 June 1997).

113. The Sub-Committee noted in particular that suggestions had been made that a non-binding instrument for the global harmonization of classification and labelling systems should be administered in future under ECOSOC auspices. In order to accommodate this within existing resources, one option might be to reconstitute the Committee of Experts on the Transport of Dangerous Goods.

114. Most delegations felt that the implementation of a globally harmonized system of classification and labelling of chemicals would require close cooperation with the Committee of Experts on the Transport of Dangerous Goods, which is currently mandated by ECOSOC to deal with such matters, and they agreed therefore that the establishment of a mechanism under ECOSOC auspices would be the most appropriate solution so as to avoid duplication of work. However, any proposal to that effect would have to be developed in close consultation with the Committee especially if the current meeting time allocated to the Committee and Sub-Committee had to be shared with any new Sub-Committee or Working group intended to deal with global harmonization issues. In particular, as no additional staff or meeting resources were likely to be allocated to these new activities, it would be necessary to evaluate to what extent the classification issues presently dealt with by the Committee (i.e. classification criteria and listing and classification of individual substances) would be dealt with by any new body, so as to make sure that these new arrangements would not be to the detriment of transport safety issues.

115. Certain delegations felt that once a globally harmonized system of classification and labelling of chemicals has been agreed upon, there would be a need for keeping the system up to date but it should not be expected that the criteria would have to be revised that often. Therefore they considered that it was premature to envisage the creation of a new structure, and that the maintenance of a globally harmonized system could be dealt with at the level of ad hoc joint ILO/UN working groups but not on a continuous basis.

116. Several delegations considered that the development and up-dating of harmonized criteria for the classification of chemicals required coordination between regulatory systems, but that the application of such criteria to the classification of individual substances should remain under the responsibility of the appropriate regulatory bodies.

117. Other delegations felt that to ensure real harmonization it would be necessary to compare the various existing classifications of existing substances on the basis of the harmonized criteria and that any new body to be established should be entrusted amongst other matters with the responsibility of classifying substances. However, it was underlined that the existing Recommendations on the Transport of Dangerous Goods deal only with dangerous goods which are most commonly carried and offer a pragmatic solution for dealing with "Not otherwise specified" substances on the basis of test criteria. Addressing the classification of all individual substances which are marketed would require considerable additional resources and it was suggested that any new international body put in place should address only divergent classification or interpretation of criteria raised by Governments or organizations concerned and should play an arbitration role in that respect.

118. It was noted that the Governments of the United States and of the United Kingdom were expected to prepare new proposals concerning a non-binding instrument to the IOMC coordinating group and that these would also be submitted to the next session of the Sub-Committee. The secretariat was invited to participate actively in the IOMC consultation process.

119. The Sub-Committee noted also that the ILO will establish a working group on the development of harmonized labelling and hazard communication systems. It was recalled that there was no harmonized system of labelling for the purposes of user or worker protection but that the UN transport labelling system was implemented worldwide efficiently. It was also recalled that Chapter 19 of Agenda 21 called for the development of compatible - and not necessarily fully harmonized - systems of labelling of chemicals. Therefore it was considered that if ILO intended to develop a system of labelling and hazard communication for the purposes of protection of consumers and workers, it would be wise to cooperate with the UN Committee of Experts on the Transport of Dangerous Goods to ensure compatibility with the existing transport labelling and hazard communication systems, but if ILO intended to develop a fully harmonized system of labelling and hazard communication applicable to all types of regulations, it would be advisable to envisage the creation of a joint ILO/UN working group to make sure that transport safety considerations presently reflected by the transport labelling system are duly taken into account.

120. The Sub-Committee invited its Vice-Chairman to participate in the next session of the IOMC coordinating group which was due to take place in Ottawa.

(b) **Physical hazard**

121. This item was discussed at working group level by the Joint UN/ILO Working Group on harmonized classification systems (see annex 4 under cover of ST/SG/AC.10/C.3/26/Add.3).

(c) **Health hazards**

(d) **Hazards to the environment**

Documents: **ST/SG/AC.10/R.473 (Germany)**
ST/SG/AC.10/C.3/R.635 (Secretariat)
ST/SG/AC.10/C.3/R.661 (Argentina)
ST/SG/AC.10/C.3/R.664 (United Kingdom)
ST/SG/AC.10/C.3/R.707 (Argentina)
ST/SG/AC.10/C.3/R.708 (Netherlands)

122. The Sub-Committee regretted that no formal information had been provided by OECD on the progress made on the work on development of criteria for toxicity, corrosivity and hazard to the environment. It was recalled that implementation of the globally harmonized criteria for toxicity, corrosivity and hazard to the environment through transport regulations would be subject to the endorsement of the criteria developed by OECD by the UN Committee of Experts on the Transport of Dangerous Goods and that, therefore better forms of communications would be needed.

RELATIONS WITH OTHER ORGANIZATIONS

Relations with ISO

Informal document : **INF.9 (ISO)**

123. The Sub-Committee took note of the report by ISO on the progress made on the work carried out by the Technical Committee ISO/TC58 Gas Cylinders, and of the invitation to participate in the meeting of ISO/TC.58/SC3 in Ottawa from 6 to 8 October 1997.

Relations with IMO

Informal document: INF.12 (IMO)
INF.28(Secretariat)

124. The Sub-Committee took note of the information provided on the outcome of the sixty-eighth session of the IMO Maritime Safety Committee, in particular with regard to the reformatting of the IMDG Code, the periodicity of amendments to the IMDG Code and the future possible mandatory application of parts of the IMDG Code.

125. A member of the secretariat underlined that, according to the original proposal made by the Government of Spain, the parts of the IMDG Code which could be made immediately mandatory were the provisions relating to the design, construction, tests and approval of tanks, IBCs and packagings i.e. provisions corresponding to those of Chapters 6.1, 6.5 and 6.6 of the Model Regulations. Those concerning IBCs and packagings have already been made mandatory under conventions regulating the international transport of dangerous goods, such as ADR and RID, and the question should be asked whether it would not be preferable to make such provisions mandatory through an international convention applicable to the international transport of dangerous goods whatever the mode of transport, under the auspices of the United Nations, rather that through several conventions each applicable to one given mode of transport, under the auspices of various organizations which are not necessarily directly involved in the elaboration and updating of the said technical provisions.

126. The expert from Belgium explained that no decision had yet be taken as to which parts of the IMDG Code would be made mandatory; he explained that the IMO Editorial and Technical group had been asked to make proposals in this regard to the next session of the Sub-Committee on Dangerous Goods, Solid Cargoes and Containers (DSC 3). He also underlined that making the IMDG Code mandatory under the SOLAS convention might result in the impossibility of updating its provisions on a less than 4-year intervals' basis.

127. The Sub-Committee was informed that Amendment No.29 to the IMDG Code, which would bring the provisions of the IMDG Code in line with those of the 10th revised edition of the Recommendations, should enter into force on 1 January 1999 with a six months' transitional period.

128. The Sub-Committee was informed that the Republic of South Korea would host the 13th International Symposium on the Transport of Dangerous Goods by Sea and Inland Waterways and that the programme would include issues relevant to the work of the Sub-Committee. Although no call for papers had yet been issued, experts interested in presenting papers for that symposium were invited to contact the secretariat */.

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*/ Note by the secretariat: A call for papers was issued after the session. Refer to ST/SG/AC.10/C.3/1997/46.

Relation with UNEP

129. The Sub-Committee was informed that UNEP chemicals (IRPTC) had issued an inventory of information sources on chemicals. Information was available via INTERNET as follows: http://irptc.unep.ch/irptc/irptc/invent/igo.htm/. Additional information on IRPTC activities were available as follows: http://irptc.unep.ch/irptc; http://irptc.unep.ch/pic; http://irptc.unep.ch/prtr; http://irptc.unep.ch/pops.

Informal document: INF.29 (Germany)

130. The expert from Germany informed the Sub-Committee that a Protocol on Biosafety was being elaborated in connection with the convention on Biological Diversity, and that that Protocol could include provisions concerning the international transport of genetically modified microorganisms and organisms currently regulated under transport regulations under UN Class 6.2 and Class 9.

131. The Sub-Committee expressed concern at the fact that there might be possible duplication of work and risk of overlapping regulations. It was mentioned in particular that an open-ended ad hoc working group held its first session in Montreal from 12 to 16 May 1997, and that that working group had been properly informed of the activities of the Committee of Experts on the Transport of Dangerous Goods but did not seem to have been appropriately informed of the legal international transport instruments based on the UN Recommendations on the Transport of Dangerous Goods and of their legally binding nature.

132. A member of the secretariat said that he had been requested by the ECOSOC secretariat to provide relevant information to the secretariat of the Convention on Biological Diversity and that he had done so not only with regard to the UN Recommendations but also with respect to related instruments such as the European Agreement concerning the International Carriage of Dangerous Goods by Road, the IMDG Code and the ICAO Technical instructions.

133. The secretariat was requested to draw again the attention of the secretariat of the Convention on Biological Diversity on the legally binding nature of transport regulations based on the Recommendations on the Transport of Dangerous Goods and of the risk of possible conflicts if requirements concerning transport were included in that Protocol on Biosafety.

134. All delegations were invited to consult the representatives of their national administration who took part in the elaboration of the Protocol.

OTHER BUSINESS

Applications for consultative status

Document: ST/SG/AC.10/C.3/1997/21 (ICPP)
Informal document: INF.7 (UIC)

135. The Sub-Committee agreed to grant consultative status to the International Confederation of Plastics Packaging Manufacturers (ICPP) and to the International Union of Railways (UIC).

Arrangements for the next session

136. The Sub-Committee agreed that the work programme for the next session would be as follows:

8-12 December:	Draft amendments to the Model Regulations (with parallel working group on the transport of low critical temperature gases in tanks, packing instructions to be discussed in plenary session)
15-17 December:	Global harmonization issues
18 December:	Reading of the report

A detailed timetable will be issued by the secretariat on the basis of proposals received.

137. The following documents were carried forward to the next session:

ST/SG/AC.10/C.3/1997/7, -/C.3/1997/10, -/C.3/1997/19, -/C.3/1997/27, -/C.3/1997/36, -/C.3/1997/37, -/C.3/1997/43;
ST/SG/AC.10//C.3/R.613/Rev.1, -/C.3/R.661, -/C.3/R.707, -/C.3/R.708, -/C.3/R.764; ST/SG/AC.10/R.473, -/R.509 and -/R.532.

TRIBUTE TO MR J. MONTEITH

138. The Sub-Committee was informed that Mr. J. Monteith, Vice-Chairman of the Committee and the Sub-Committee from 1990 to 1996 would retire soon and therefore would not participate any longer in future sessions of the Sub-Committee. The Chairman thanked Mr. Monteith for his contribution to the work of the Committee and the Sub-Committee for so many years and the Sub-Committee warmly and unanimously endorsed the sentiments expressed by the Chairman.

ADOPTION OF THE REPORT

139. The Sub-Committee adopted the report on its thirteenth session and the annexes thereto.

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Annex 1

Amendments to the proposed guidelines for assigning portable tank requirements to substances of Classes 3 to 9 (Refer to document ST/SG/AC.10/C.3/1997/16)

Note: A consolidated version of the guidelines, as amended, is reproduced in ST/SG/AC.10/C.3/26/Add.1.

Text of document ST/SG/AC.10/C.3/1997/16 with the following modifications :

Page	Paragraph	
3	3.	Add at the end of this paragraph a new sentence as follows: "For example bottom openings may not be appropriate for substances corrosive to ship structures."
4		Add a new paragraph 5.8 as follows: "5.8 **Molten substances**: Assignments for molten substances of all classes should be based on the requirements established for liquids of the same class, division, packing group and subsidiary risk of the substance."
5	6.2	Delete footnote (**).
	6.3b	Delete footnote (**).
	6.4	Delete footnote (***).
6	6.5	In the footnote (*), delete "or lower" and "(4 bar minimum)".
	6.6	In the footnote (*), delete "PG II or III". Insert in the beginning of footnote (**) the following: "For all granular or powdered solid substances and" and delete "solid" after "some".
7	6.10	Delete footnote (**).
	6.13	In the title, add "and Self-Reactive Substances, Type F, in Division 4.1" after "(Type F Organic Peroxides)". In the note, delete brackets around "T34" and add "and Self-Reactive Substances, Type F," after "Organic peroxides, Type F".
8	6.15	Delete footnote (**).
	6.17	Delete footnote (**).
9	6.19	Delete footnote (**).
	6.22	In the title, delete the words "Molten Substances and". In the Bottom Openings column, replace "6.6.2.6.3" with "6.6.2.6.2" Delete the note.

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Annex 2

Draft amendments to the Model Regulations annexed to the 10th revised edition of the Recommendations on the Transport of Dangerous Goods (see ST/SG/AC.10/C.3/26/Add.2)

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Annex 3

Guiding principles for developing packing instructions to be included in the model regulations

Basic principles

1. Packing instructions should be clear and provide as wide a choice of packagings as possible while providing an adequate level of safety.

2. The packing instructions should consist of a small number of general instructions supplemented by a limited number of more specific instructions for particularly hazardous or specialized substances and articles.

3. Packing instructions should be developed with the objective of being suitable for multimodal transport. More severe packaging restrictions may in some instances be necessary for specific modes of transport.

4. A rationalized approach should be used for allocating packing instructions to specific substances.

5. Existing regulations establishing packaging requirements should be considered in developing instructions with parties specifically responsible for those regulations bringing forward relevant points.

6. Part 6 of the Model Regulations annexed to the Recommendations on the Transport of Dangeorus Goods includes capacity and mass limits for packagings and IBCs. These limits should be used unless there is safety based rationale for different limitations.

7. Separate instructions should be developed for packagings and IBCs.

Administrative guidelines

8. The packing instructions should be completed within the 1997-1998 biennium.

9. The current United Kingdom and United States of America documents together with other documents also based on existing modal regulations should be used as a basis for developing the packing instructions. These documents should be considered as work in progress to be used by the Sub-Committee and its working group to complete its work in developing packing instructions which are acceptable to all concerned parties including modal authorities.

10. Delegations should be encouraged to provide detailed comments to the United Kingdom and United States of America in due time prior to the submission deadline for papers to the fourteenth session of the Sub-Committee.

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Annex 4

Report of the Joint UN/ILO Working Group on harmonized classification criteria for physical hazards (see ST/SG/AC.10/C.3/26/Add.3)

UNITED
NATIONS

ST

Secretariat

Distr.
GENERAL

ST/SG/AC.10/C.3/26/Add.1
1 August 1997

ENGLISH
Original: ENGLISH AND FRENCH

COMMITTEE OF EXPERTS ON THE TRANSPORT
OF DANGEROUS GOODS

Sub-Committee of Experts on the
Transport of Dangerous Goods

REPORT OF THE SUB-COMMITTEE OF EXPERTS ON ITS THIRTEENTH SESSION

(Geneva, 7-17 July 1997)

Addendum 1

Guidelines for assigning portable tank requirements to substances in Classes 3 to 9
(See ST/SG/AC.10/C.3/26, paras. 17 and 18 and Annex 1)

GE.97-22804

GUIDELINES FOR ASSIGNING PORTABLE TANK REQUIREMENTS TO SUBSTANCES IN CLASSES 3 TO 9

1. These guidelines for assigning portable tank requirements to substances in Classes 3 to 9 are provided as a reference to be used for assigning portable tank requirements to specific substances. The guidelines were developed taking into consideration the hazards of dangerous goods and their physical and chemical characteristics.

2. The guidelines provide guidance for assigning specific requirements including minimum test pressures, minimum shell thicknesses, pressure-relief device arrangements and bottom opening closure requirements for portable tanks used to transport substances in Classes 3 to 9.

3. For certain substances the tank requirements recommended by these guidelines may not be appropriate owing to unique characteristics of the substance not addressed in these guidelines. In these instances expert judgement should be applied in assigning appropriate requirements. For example bottom openings may not be appropriate for substances corrosive to ship structures.

4. The guidelines are provided in two parts. Part I provides general guidance. Part II provides specific guidance for groups of substances organized on the basis of the Class or Division, Packing Group and subsidiary risk.

Part I

General Guidelines

5. In assigning tank requirements to a substance the following should be taken into account:

5.1 ***Prohibited Substances***: Some substances should be prohibited from transport in portable tanks. These substances are considered too dangerous for transport typically because of their instability or because they pose an unacceptably high level of risk when transported in bulk quantities under normal conditions of transport. The following substances are prohibited from transport in portable tanks:

- Substances of Class 1;
- Desensitised explosives in Division 4.1;
- Self-reactive substances (other than type F) and related substances of Division 4.1;
- Organic peroxides of Division 5.2 other than type F;
- Radioactive materials other than Low Specific Activity (LSA) non-fissile or fissile excepted materials.

Additional prohibited substances are specifically identified in the Model Regulations. Furthermore, some substances may only be transported on the basis of an approval by the competent authority.

5.2 ***Minimum Shell Thicknesses***: The minimum shell thicknesses prescribed are provided in thicknesses relevant to reference steel with a guaranteed minimum tensile strength of 370 N/mm^2 and a guaranteed minimum elongation of 27%. When other materials are used equivalent thickness calculations should be performed. Minimum thicknesses range from 5 mm to 10 mm. Part II of the guidelines provide guidance for assigning minimum thicknesses. Granular or powdered solid substances of PG II or III may be

transported in tanks with minimum shell thicknesses of 5 mm in the reference steel regardless of the tank diameter when 6.6.2.4.2 is specified relevant to a given substance. Regardless of the minimum thickness specified in Part II, if the thickness determined in accordance with the provisions of sections 6.6.2.4 is greater, the greater thickness shall be applied.

5.3 ***Corrosive Effects of Substances on Materials of Construction***: The minimum thicknesses prescribed do not take a substance's corrosive effects into account. The consignor must ensure that the tank materials of construction are compatible with the lading.

5.4 ***Minimum Test Pressures***: Irrespective of the pressure assigned in these guidelines, the minimum test pressure assigned to an individual substance should be the greater of the pressure determined on the basis of the definitions in 6.6.2.1 of the Model Regulations and the pressure assigned in these guidelines.

5.5 ***Pressure-Relief Devices Requirements***: Two pressure relief device requirements are possible, (1) Normal (N) (where the provisions of paragraph 6.6.2.8.1 apply) or (2) 6.6.2.8.3. When paragraph 6.6.2.8.3 is referenced, a frangible disk must be provided in series preceding the pressure relief device. Paragraph 6.6.2.8.3 should be assigned to substances that:

- have the potential to polymerize or to produce solid or highly viscous substances capable of preventing proper operation of the relief valve.

In addition, 6.6.2.8.3 is also specified for individual substances as specified in the dangerous goods list based on the decisions of the Committee of Experts.

5.6 ***Bottom Openings***: Three possible bottom opening arrangements are proposed, 6.6.2.6.3 (which indicates three serially mounted means of closure), 6.6.2.6.2 (two serially mounted means of closure) or NA (Not Allowed).

5.7 ***Filling Limits***: Three different filling restrictions are possible. The filling limits are considered operational requirements. The filling limits do not have a direct relationship to the construction of the tank or the arrangement of the service equipment. On this basis, filling limits are not addressed in Part II of this Annex and will not be included in the tank type designations. The maximum filling limit for a substance should be consistent with the provisions under "Filling" in Chapter 4.2 of the Model Regulations. The shipper of the dangerous goods has the ultimate responsibility for assuring portable tanks are not filled in excess of the specified limits for each substance, solution or mixture transported.

5.8 ***Molten Substances***: Assignments for molten substances of all classes should be based on the requirements established for liquids of the same class, division, packing group and subsidiary risk of the substance.

Part II

Specific guidelines for assigning portable tank requirements to groups of substances

6.0 In assigning tank requirements to a substance the following should be taken into account:

6.1 For substances in **CLASS 3, PG III without a subsidiary risk** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	1.5 bar */	6.6.2.4.2	Normal	6.6.2.6.3

*/ A higher minimum test pressure may be required depending on the absolute vapour pressure of the substance at 65 °C and the pressure prescribed using the definitions for design and test pressure in paragraphs 6.6.2.1 of the Model Regulations.

6.2 For substances in **CLASS 3, PG III with a Division 6.1 or a Class 8 subsidiary risk** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	2.65 bar */	6.6.2.4.2	Normal	6.6.2.6.3

*/ A higher minimum test pressure may be required depending on the absolute vapour pressure of the substance at 65 °C and the pressure prescribed using the definitions for design and test pressure in paragraphs 6.6.2.1 of the Model Regulations.

6.3a For substances in **CLASS 3, PG II without subsidiary risks**, the following requirements should apply:

Portable Tank Instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	2.65 bar */	6.6.2.4.2	Normal	6.6.2.6.3

*/ A higher minimum test pressure may be required depending on the absolute vapour pressure of the substance at 65 °C and the pressure prescribed using the definitions for design and test pressure in paragraph 6.6.2.1 of the Model Regulations.

6.3b For substances in **CLASS 3, PG II with Division 6.1 or Class 8 subsidiary risks** the following requirements should apply:

Portable Tank Instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	4.0 bar */	**6.6.2.4.2**	**Normal**	**6.6.2.6.3**

*/ A higher minimum test pressure may be required depending on the absolute vapour pressure of the substance at 65 °C and the pressure prescribed using the definitions for design and test pressure in paragraph 6.6.2.1 of the Model Regulations.

6.4 For substances in **CLASS 3, PG I**, substances in **CLASS 3, PG I with a Division 6.1 PG II or III subsidiary risk** and substances in **CLASS 3, PG I with a Class 8 PG II or III subsidiary risk,** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottomopenings
	6 bar */	**6.6.2.4.2**	**Normal **/**	**6.6.2.6.3**

*/ A higher minimum test pressure may be required depending on the absolute vapour pressure of the substance at 65 °C and the pressure prescribed using the definitions for design and test pressure in paragraphs 6.6.2.1 of the Model Regulations.

**/ Some substances in this category require 6.6.2.8.3.

***Note**: For Class 3 PG I substances with subsidiary risks which are assigned to n.o.s. entries the guidelines in 6.5 shall be applied.*

6.5 For substances in **CLASS 3, PG I with a Division 6.1, PG I subsidiary risk**, and substances in **CLASS 3, PG I with Class 8, PG I subsidiary risk**, the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	6 bar */	**6 mm**	**6.6.2.8.3**	**NA**

*/ A higher minimum test pressure may be used depending on the absolute vapour pressure of the substance at 65 °C and the pressure prescribed using the definitions for design and test pressure in paragraphs 6.6.2.1 of the Model Regulations.

6.6 The following requirements should apply for:
Flammable solids in DIVISION 4.1, PG II and III, Solid substances in DIVISION 4.2, PG II and III, Solid substances in DIVISION 4.3, PG II and III, Solid substances in DIVISION 5.1, PG II and III Solid substances in DIVISION 6.1, PG II and III, Solid substances in CLASS 8, PG II and III Solid substances in CLASS 9, PG II and III

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	1.5 bar	6.6.2.4.2 */	Normal	6.6.2.6.3 **/

*/ Granular or powdered solid substances may be transported in tanks with minimum shell thicknesses of 5 mm in the reference steel regardless of the tank diameter.

**/ All granular or powdered solid substances and some highly viscous or crystallizable substances are permitted to be transported in portable tanks with two serially fitted and mutually independent shut-off devices in accordance with 6.6.2.6.2.

6.7 For **liquid** substances in **DIVISION 4.2, PG I** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	10 bar	10 mm	Normal	NA

6.8 For substances in **DIVISION 4.3, PG I with or without subsidiary risks** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	4 bar	6 mm	Normal	NA

Note: *There are exceptions where more stringent requirements (minimum test pressure and minimum shell thickness) have been applied on the basis of industry practice (e.g. Metal Alkyls).*

6.9 For **solutions of solid oxidizers in DIVISION 5.1, PG II and III**, the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	2.65	6.6.2.4.2	Normal	6.6.2.6.3

6.10 For substances in **DIVISION 5.1, PG II (hydrogen peroxides solutions) with a subsidiary risk of Class 8** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	4 bar	6.6.2.4.2	Normal */	6.6.2.6.3

*/ Certain substances require a breathing device.

6.11 For substances in **DIVISION 5.1, PG I with subsidiary risk of Class 8** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	4 bar	6 mm	6.6.2.8.3	NA

6.12 For substances in **DIVISION 5.1, PG I with a Class 8 and a Division 6.1 subsidiary risk** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	10 bar	10 mm	6.6.2.8.3	NA

6.13 For substances in **DIVISION 5.2, PG II (Type F Organic Peroxides)** and **self-reactive substances, type F, in DIVISION 4.1**, the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	4 bar	6.6.2.4.2	6.6.2.8.2 4.2.1.13.6 4.2.1.13.7 4.2.1.13.8	6.6.2.6.3

***Note**: Organic peroxides, type F and self-reactive substances, type F, are only permitted in portable tanks when they are listed in Portable Tank Instruction T 34. All others are prohibited unless approved by the competent authority.*

6.14 For **liquid** substances in **DIVISION 6.1 PG III** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	2.65 bar */	6.6.2.4.2	Normal	6.6.2.6.3

*/ A higher minimum test pressure may be used depending on the absolute vapour pressure of the substance at 65 °C and the pressure prescribed using the definitions for design and test pressure in paragraphs 6.6.2.1 of the Model Regulations.

6.15 For liquid substances in **DIVISION 6.1 PG II with or without subsidiary risks** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	4 bar */	**6.6.2.4.2**	**Normal**	**6.6.2.6.3**

*/ A higher minimum test pressure may be required depending on the absolute vapour pressure of the substance at 65 °C and the pressure prescribed using the definitions for design and test pressure in paragraphs 6.6.2.1 of the Model Regulations.

6.16 For substances in ***DIVISION 6.1 PG I (non-inhalation hazard) with or without subsidiary risks*** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	6 bar */	**6 mm**	**6.6.2.8.3**	**NA**

*/ A higher minimum test pressure may be required depending on the absolute vapour pressure of the substance at 65 °C and the pressure prescribed using the definitions for design and test pressure in paragraphs 6.6.2.1 of the Model Regulations.

***Note**: Higher minimum test pressure and higher minimum thickness requirements should be considered for Division 6.1 substances that are classified as toxic on the basis of an inhalation hazard at the PG I level.*

6.17 Class 7 assignments are not dealt with in this document.

6.18 For **liquid** substances in **CLASS 8 PG III** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	2.65 bar */	**6.6.2.4.2**	**Normal**	**6.6.2.6.3**

*/ A higher minimum test pressure may be required depending on the absolute vapour pressure of the substance at 65 °C and the pressure prescribed using the definitions for design and test pressure in paragraphs 6.6.2.1 of the Model Regulations.

6.19 For **liquid** substances in **CLASS 8 PG II with or without a subsidiary risk** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	4 bar */	**6.6.2.4.2**	**Normal**	**6.6.2.6.3**

*/ A higher minimum test pressure may be required depending on the absolute vapour pressure of the substance at 65 °C and the pressure prescribed using the definitions for design and test pressure in paragraphs 6.6.2.1 of the Model Regulations.

6.20 For **liquid** substances in **CLASS 8 PG I with or without a subsidiary risk** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	4 bar	**6 mm**	**6.6.2.8.3**	**NA**

6.21 For **liquid** substances in **CLASS 9**, the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell trickness	Pressure relief device	Bottom openings
	1.5 bar */	**6.6.2.4.2**	**Normal**	**6.6.2.6.3**

*/ A higher minimum test pressure may be required depending on the absolute vapour pressure of the substance at 65 °C and the pressure prescribed using the definitions for design and test pressure in paragraphs 6.6.2.1 of the Model Regulations.

6.22 For **elevated temperature substances** in **CLASS 9** the following requirements should apply:

Portable tank instruction	Minimum test pressure	Minimum shell thickness	Pressure relief device	Bottom openings
	1.5 bar */	**6.6.2.4.2**	**Normal**	**6.6.2.6.2**

*/ A higher minimum test pressure may be required depending on the absolute vapour pressure of the substance at 65 °C and the pressure prescribed using the definitions for design and test pressure in paragraphs 6.6.2.1 of the Model Regulations.